

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

3SHAPE A/S,)	
)	
)	
Plaintiff,)	Civil Action No. 18-886-LPS-CJB
v.)	
)	JURY TRIAL DEMANDED
ALIGN TECHNOLOGY, INC.,)	
)	
Defendant.)	

AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff 3Shape A/S (“Plaintiff” or “3Shape”), by and through its undersigned counsel, for its complaint against Defendant Align Technology, Inc. (“Defendant” or “Align”), hereby alleges and states the following:

PARTIES

1. Plaintiff 3Shape is a Danish corporation with a principal place of business at Holmens Kanal 7, 1060 Copenhagen K, Denmark.

2. Plaintiff is the owner by assignment of the entire right, title and interest in and to U.S. Patent No. 9,629,551 (“the ’551 patent”) entitled, “Detection of a Movable Object When 3D Scanning a Rigid Object,” a copy of which is attached hereto as Exhibit A.

3. Plaintiff is the owner by assignment of the entire right, title and interest in and to U.S. Patent No. 10,349,042 (“the ’042 patent”) entitled “Focus Scanning Apparatus,” a copy of which is attached hereto as Exhibit F.

4. Plaintiff sells an industry-leading intraoral scanner under the name TRIOS®.

5. The TRIOS® system incorporates embodiments of the patented technologies of the ’551 patent.

6. Defendant is a competitor of Plaintiff in the field of intraoral scanners.

7. Upon information and belief, Defendant is a United States corporation organized and existing under the laws of Delaware, with a principal place of business at 2820 Orchard Parkway, San Jose, California 95134.

8. Upon information and belief, Defendant makes, uses, sells and offers for sale in the United States and/or imports into the United States products called “iTero Element Scanner,” “iTero Element 2 Scanner” and “iTero Element Flex Scanner” (collectively “the iTero Element Scanners”), which comprise a handheld intraoral 3D scanner/wand.

JURISDICTION AND VENUE

9. This is an action for patent infringement arising under the patent laws of the United States, Title 35, United States Code, § 100 *et seq.*

10. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

11. This Court has personal jurisdiction over Defendant because it has, directly or through its agents and/or intermediaries, committed acts within Delaware giving rise to this action and/or Defendant has established minimum contacts with Delaware such that the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

12. Upon information and belief, Defendant regularly conducts business in Delaware, and purposefully avails itself of the privileges of conducting business in Delaware. In particular, upon information and belief, Defendant and/or its agents and/or intermediaries, make, use, import, offer for sale, sell and/or advertise their products and affiliated services in Delaware, including the iTero Element Scanners, sufficient to give rise to jurisdiction.

13. Defendant has also purposely availed itself of the courts of this venue, having brought actions against Plaintiff in the federal courts of the District of Delaware, including the pending 17-cv-1646, -1647, -1648, and -1649 actions. The use of the courts of this jurisdiction is sufficient to give rise to jurisdiction over Defendant.

14. Upon information and belief, and as further described herein, Defendant has infringed and continues to infringe and/or contributorily infringe the '551 patent and the '042 patent in Delaware, which has led to foreseeable harm and injury to Plaintiff. Upon information and belief, Defendant derives substantial revenue from the sale of infringing products distributed within Delaware and/or expects or should reasonably expect its actions to have consequences in Delaware. In addition, upon information and belief, Defendant knowingly induces, and continues to knowingly induce, infringement of the '551 patent and the '042 patent within Delaware by offering for sale, selling, and/or contracting with others to market infringing products with the intent to facilitate infringing use of the products by others within Delaware and by creating and/or disseminating product information and other materials providing instruction for infringing use.

15. Venue is proper in this District pursuant to 28 U.S.C. § 1391(b), (c) and/or (d), and 28 U.S.C. § 1400(b).

COUNT 1: DIRECT INFRINGEMENT OF THE '551 PATENT

16. Plaintiff incorporates by reference the preceding paragraphs as if set forth fully herein.

17. This cause of action arises under the patent laws of the United States, and in particular, 35 U.S.C. §§ 271, *et seq.*

18. The '551 patent was duly and lawfully issued by the United States Patent and Trademark Office ("USPTO") on April 25, 2017, to listed inventors Rune Fisker, Michael Vinther, and Henrik Öjelund.

19. Plaintiff is the owner by assignment of all right, title and interest in and to the '551 patent. Evidence of the assignment of the '551 patent to Plaintiff is recorded with the USPTO at Reel/Frame 043981/0005. Plaintiff is listed on the face of the '551 patent as assignee.

20. The '551 patent is entitled, "Detection of a Movable Object When 3D Scanning a Rigid Object."

21. The '551 patent is directed to the detection of a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for generating a virtual 3D model of the rigid object.

22. Defendant makes, uses, offers to sell, sells, imports, promotes and/or demonstrates versions of its iTero Element Scanners, including the wand, cart, and/or related software, and other related products ("Accused Products") in the United States.

23. Defendant possesses knowledge of, and is aware of, the '551 patent.

24. Defendant had previously unsuccessfully challenged the patentability of claims 1-25 of the '551 patent in *inter partes* review (IPR) proceedings IPR2018-00195 and IPR2018-00196 before the USPTO.

25. A panel of Administrative Patent Judges at the Patent Trial and Appeals Board of the USPTO determined that Defendant's IPR Petitions did not present a *prima facie* case for the unpatentability of the claims of the '551 patent and that trial should not be instituted in connection with either Petition.

26. Defendant has been and is now directly infringing, literally and/or under the doctrine of equivalents at least claims 1, 22, 23, and 25 of the '551 patent.

27. Each of Defendant's Accused Products includes a system and/or a method for [1] detecting a movable object in a location, when [2] scanning a rigid object in the location by means of [3] a 3D scanner for [4] generating a virtual 3D model of the rigid object.

28. Defendant's Accused Products detect movable objects in a location.

29. For example, Defendant's Accused Products "eliminate extra process steps during intraoral scanning because iTero Element is designed to automate those for you." *See, e.g.*, 2015 Align Technology, Inc. Brochure For General Practitioners M20324 Rev. A ("Brochure") at 4, attached hereto as Exhibit B and entitled, "iTero® element™ PRECISION." Defendant's Brochure further states that "while you are scanning, iTero Element is engineered to simultaneously process the scan. It automatically stitches together images for rendering in the correct order, adapts to changes in positioning, and ***detects and removes soft tissues*** [*i.e.*, movable objects]. Capture everything. And view exactly what you need to see." *Id* (emphasis added).

30. Defendant's Accused Products scan rigid objects in the location.

31. For example, Defendant's Accused Products make use of color scanning "to immediately distinguish between gingival and tooth structures [*i.e.*, rigid objects]" *See* Brochure at 4.

32. Defendant's Accused Products make use of a 3D scanner.

33. For example, Defendant's Accused Products include "[t]he iTero Element Intraoral Scanner ... designed to deliver speed, reliability, intuitive operations, and outstanding

visualization capabilities.” *See e.g.*, Brochure at 3. Further, Defendant’s Accused Products include “[i]ndustry-leading, open-choice imaging [that] lets you view images in 3D.” *Id.* Furthermore, Defendant’s Accused Products include “[i]ntegrated gyro technology [that] lets you rotate models on screen.” *Id.* Defendant’s Accused Products allows users to “[s]pin, pinch zoom and process images with a touch.” *Id.*

34. Defendant’s Accused Products generate virtual 3D models of rigid objects in the location.

35. For example, Defendant’s Accused Products’ “[i]ndustry-leading, open-choice imaging lets you view images in 3D.” *Id.*

36. Upon information and belief, each of Defendant’s Accused Products makes use of a method, wherein the method comprises: [5] providing a first 3D representation of at least part of a surface by scanning at least part of the location; [6] providing a second 3D representation of at least part of the surface by scanning at least part of the location; [7] determining for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation, and/or determining for the second 3D representation a second excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; [8] if a portion of the surface in the first 3D representation is located in space in the second excluded volume, the portion of the surface in the first 3D representation is disregarded in the generation of the virtual 3D model; and/or if a portion of the surface in the second 3D representation is located in space in the first excluded volume, the portion of the surface in the second 3D representation is disregarded in the generation of the virtual 3D model.

37. Defendant's Accused Products provide multiple (*i.e.*, first and second) overlapping 3D representations of a part of a surface in a short amount of time.

38. For example, Defendant's Accused Products are "engineered to capture 6,000 frames per second." *See* Brochure at 3. "With a scan capture time of 40-50 milliseconds, iTero Element is designed to capture 20 scans per second." *Id.*

39. Further, two or more overlapping 3D representations of a part of a surface are required for Defendant's Accused Products to "stitch[] together images for rendering in the correct order." *Id.* at 4.

40. Defendant's Accused Products determine for each 3D representation an excluded volume in space where no space can be present in both a first 3D representation and a second 3D representation.

41. Each of Defendant's Accused Products rely on parallel confocal sampling, a type of digital scanning technology available to the dental scanning industry that would necessarily calculate excluded volume data which is defined by at least the distances from the scanner to the tooth surface for each successive overlapping scan. *See, e.g.*, Brochure at 2; *see also* '551 patent at 28:9-16.

42. Upon information and belief, Defendant's Accused Products provide successive scans that include substantially the same location/space because each of the iTero Element Scanners has "a scan capture time of 40-50 milliseconds [and] is designed to capture 20 scans per second." *Id.* at 3.

43. Defendant's Accused Products disregard portions of the surface in a first 3D representation that is located in the space of a second excluded volume in the generation of the

virtual 3D model and/or disregard portions of the surface in a second 3D representation that are located in the space of a first excluded volume in the generation of a virtual 3D model

44. For example, Defendant's Accused Products were known to detect and remove soft tissue [*i.e.*, movable objects] by disregarding portions of the surface in a first 3D representation that were located in the space in a second excluded volume in the generation of the virtual 3D model and/or by disregarding portions of the surface in a second 3D representation that were located in the space in a first excluded volume in the generation of the virtual 3D model. *See* Brochure at 4.

45. Additionally, a Gardner Orthodontics Video ("Video 1") found at <https://www.youtube.com/watch?v=bxZzzJvB4OM> and published on December 29, 2016 (last visited June 3, 2018), attached hereto as Exhibit C, depicts Defendant's Accused Products scanning teeth (*e.g.*, a rigid object) in a location (*e.g.*, patient's mouth) by means of a 3D scanner and generating a virtual 3D model of the rigid object.

46. At time 1:50 [min:sec] of Video 1, a movable object (*i.e.*, lip) is detected on the labial side of the patient's anterior teeth by Defendant's Accused Products, as depicted below.



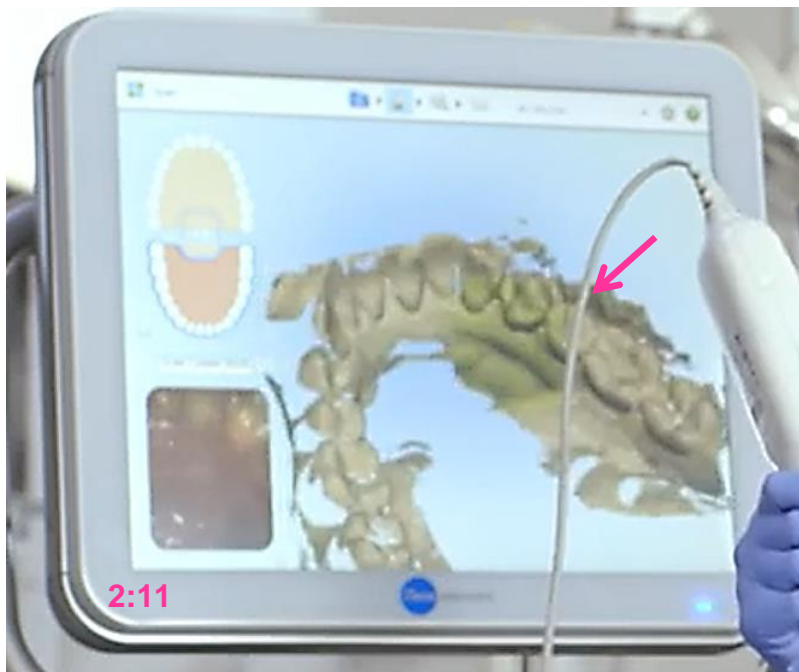
47. At time 2:03 of Video 1, surfaces associated with the movable object (*i.e.*, lip) are disregarded in the generation of the virtual 3D model of the patient's mouth as depicted below.

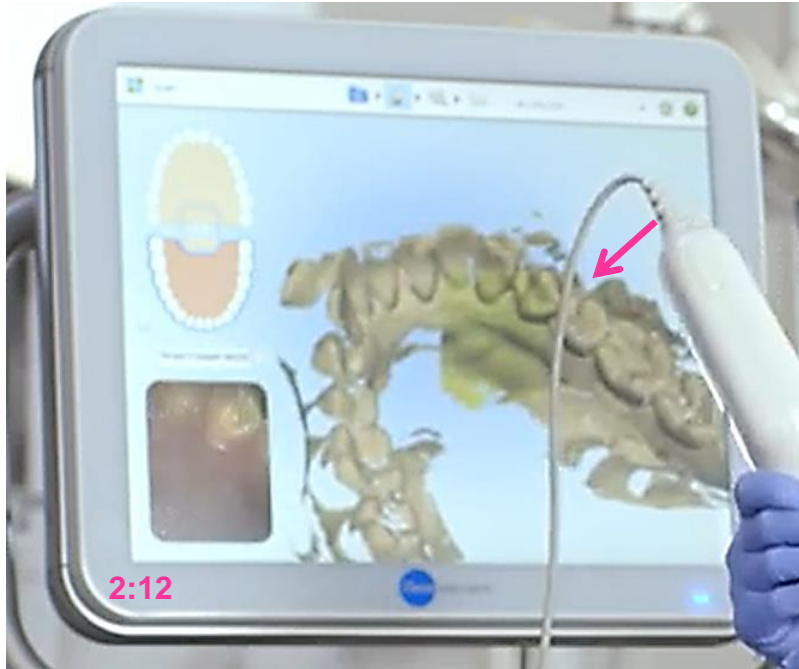


48. Further, an Align Technology, Inc. Video ("Video 2") found at <https://www.youtube.com/watch?v=hDzBjbqD-KI> and published on August 14, 2015 (last visited June 3, 2018), attached hereto as Exhibit D, depicts Defendant's Accused Products

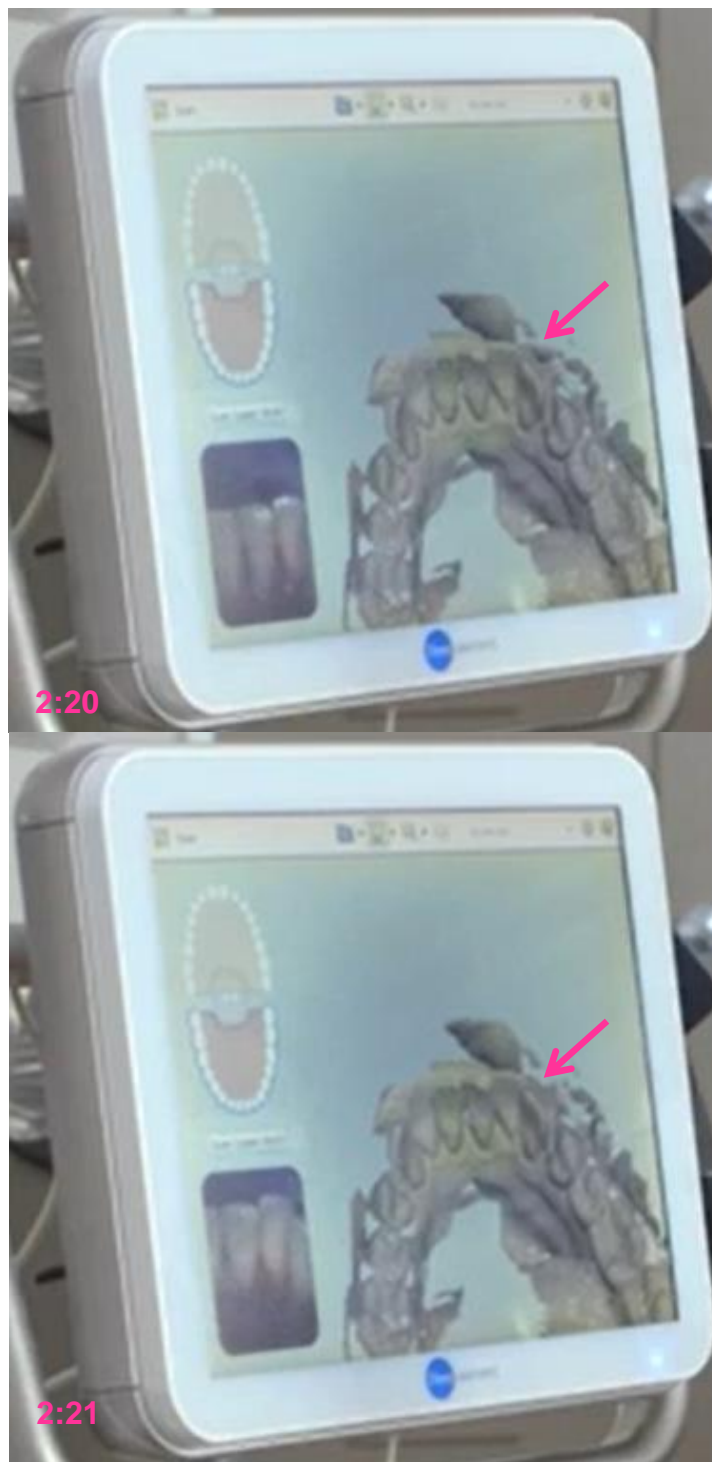
scanning teeth (*e.g.*, a rigid object) in a location (*e.g.*, patient's mouth) by means of a 3D scanner and generating a virtual 3D model of the rigid object.

49. As depicted below, at time 2:11 of Video 2, a movable object is detected by Defendant's Accused Products; and at time 2:12 of Video 2, surfaces associated with the movable object are disregarded in the generation of the virtual 3D model of the patient's mouth.





50. Further, as depicted below, at time 2:20 of Video 2, a movable object is detected by Defendant's Accused Products; and at time 2:21 of Video 2, surfaces associated with the movable object are disregarded in the generation of the virtual 3D model of the patient's mouth.



51. Each of Defendant's Accused Products includes a system comprising a hardware processor configured to: provide a first 3D representation of at least part of a surface by scanning

at least part of the location; provide a second 3D representation of at least part of the surface by scanning at least part of the location; determine for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; determine for the second 3D representation a second excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; disregard the portion of the surface in the first 3D representation in the generation of the virtual 3D model, if a portion of the surface in the first 3D representation is located in space in the second excluded volume, and/or disregard the portion of the surface in the second 3D representation in the generation of the virtual 3D model, if a portion of the surface in the second 3D representation is located in space in the first excluded volume.

52. For example, Defendant's Accused Products include a hardware processor such that "while you are scanning, iTero Element is engineered to simultaneously process the scan. It automatically stitches together images for rendering in the correct order, adapts to changes in positioning, and detects and removes soft tissue." *See, e.g.*, Brochure at 4.

53. Each of Defendant's Accused Products includes a nontransitory computer readable medium encoded with a computer program product comprising program code for causing a data processing system to detect a movable object in a location, when scanning a rigid object in the location by means of a 3D scanner for generating a virtual 3D model of the rigid object by providing a first 3D representation of at least part of a surface by scanning at least part of the location; providing a second 3D representation of at least part of the surface by scanning at least part of the location; determining for the first 3D representation a first excluded volume in space where no surface can be present in both the first 3D representation and the second 3D

representation; determining for the second 3D representation a second excluded volume in space where no surface can be present in both the first 3D representation and the second 3D representation; if a portion of the surface in the first 3D representation is located in space in the second excluded volume, the portion of the surface in the first 3D representation is disregarded in the generation of the virtual 3D model; and/or if a portion of the surface in the second 3D representation is located in space in the first excluded volume, the portion of the surface in the second 3D representation the portion of the surface in when said program code is executed on the data processing system.

54. For example, Defendant's Accused Products include "software [*i.e.*, a computer program product comprising program code that] automatically detects and repositions scanning start and stop points when you move to a new scanning position within the scanned segment." Brochure at 4.

55. Further, Defendant's Accused Products include a computer program product comprising program code that "automatically stitches together images for rendering in the correct order, adapts to changes in positioning, and detects and removes soft tissue." *Id.*

56. On information and belief, Defendant's Accused Products rely on a system hard disk, *i.e.*, a nontransitory computer readable medium encoded with the software discussed in paragraphs 54 and 55 to carry out the claimed methods of the '551 patent. Defendant's Accused Products also "automatically save scan data every two seconds and save it to the system's hard disk." *Id.*

57. These features of each of Defendant's Accused Products in paragraphs 26-56 above correspond to those recited and claimed in at least claims 1, 22, 23, and 25 of the '551

patent.

58. Defendant has sold and/or offered for sale its iTero Element Scanners in the United States at trade shows in Chicago, IL, New York, NY and Detroit, MI. The “Align Technology Announces Next Generation iTero(R) Element(TM) Intraoral Scanner” webpage (last visited May 4, 2018), attached hereto as Exhibit E, is further evidence of Defendant’s sale and/or offer for sale of the iTero Element Scanner product in the United States.

59. Defendant thus directly infringes, literally and/or under the doctrine of equivalents, and/or indirectly infringes, at least claims 1, 22, 23, and 25 of the ’551 patent.

60. On information and belief, Defendant intends to, and continues to intend to, directly infringe the ’551 patent through the sale of the Accused Products.

61. Defendant knew or should have known of the ’551 patent and its infringement of the ’551 patent, and has acted and continues to act, in an egregious and wanton manner by infringing the ’551 patent.

62. Despite knowing that its actions constituted infringement of the ’551 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the patent, Defendant nevertheless continued its infringing actions, and continues to make, use, and sell, the Accused Products.

63. Defendant’s acts of infringement have injured and damaged Plaintiff and will continue to injure and damage Plaintiff.

64. Defendant’s actions have caused Plaintiff to suffer irreparable harm resulting from the loss of its lawful patent rights and the loss of its ability to exclude others from the market.

65. Upon information and belief, Defendant will continue these infringing acts unless enjoined by this court.

COUNT 2: INDIRECT INFRINGEMENT OF THE '551 PATENT BY INDUCEMENT

66. Plaintiff repeats and realleges the allegations set forth in paragraphs 1 to 65 above as if fully set forth herein.

67. Defendant is liable for inducing infringement of the '551 patent under 35 U.S.C. §271(b) by having knowledge of the '551 patent and knowingly causing or intending to cause, and continuing to knowingly cause or intend to cause, direct infringement of the '551 patent, with specific intent, by its customers.

68. Specifically, Defendant actively induces infringement of the '551 patent by, *inter alia*, training its customers on the use of the Accused Products and/or promotion, sales, and/or importation of the Accused Products including the infringing iTero Element Scanners to Defendant's customers including, but not limited to, resellers and end users for their use of the system claimed in the '551 patent.

69. Defendant's customers for the Accused Products directly infringe the '551 patent by making, using, selling, offering for sale, and/or importing the iTero Element Scanners.

70. For example, Defendant actively induces infringement of the '551 patent, because Defendant has knowledge that end users of Defendant's iTero Element Scanners including, but not limited to, dentists and technicians, use Defendant's infringing iTero Element Scanners product in the United States, and because Defendant encourages such acts resulting in direct patent infringement, by, *inter alia*, training, promotion, sales, and/or importation of the infringing iTero Element Scanners to Defendant's customers including, but not limited to,

resellers and end users for their use of the system claimed in the '551 patent.

71. On information and belief, Defendant intends to, and continues to intend to, indirectly infringe the '551 patent through inducement of the sale and use of the Accused Products.

72. Defendant knew or should have known of the '551 patent and has acted, and continues to act, in an egregious and wanton manner by infringing the '551 patent.

73. Despite knowing that its actions constituted inducement infringement of the '551 patent and/or despite knowing that there was a high likelihood that its actions constituted inducement infringement of the patent, Defendant nevertheless continued its infringing actions, and continues to make, use, and sell, the Accused Products.

74. Defendant's acts of infringement have injured and damaged Plaintiff and will continue to injure and damage Plaintiff.

75. Defendant's actions have caused Plaintiff to suffer irreparable harm resulting from the loss of its lawful patent rights and the loss of its ability to exclude others from the market. Upon information and belief, Defendant will continue these infringing acts unless enjoined by this court.

COUNT 3: INDIRECT INFRINGEMENT OF THE '551 PATENT BY

CONTRIBUTORY INFRINGEMENT

76. Plaintiff repeats and realleges paragraphs 1 to 75 as if fully set forth herein.

77. Defendant is liable for contributory infringement of the '551 patent under 35 U.S.C §271(c) by having sold or offered to sell, and continuing to sell or offer for sale the iTero Element Scanners within the United States and/or by importing the iTero Element Scanners into

the United States because the iTero Element Scanners constitute a material part of the invention embodied in the '551 patent, which Defendant knows to be especially made and/or especially adapted for use in infringement of the '551 patent, and which is not a staple article or commodity of commerce suitable for substantial non-infringing use.

78. Defendant is liable for contributory infringement by having knowledge of the '551 patent and knowingly causing or intending to cause, and continuing to knowingly cause or intend to cause, direct infringement of the '551 patent by its customers including, but not limited to, resellers and end users of the iTero Element Scanners.

79. Specifically, Defendant contributes to infringement of the '551 patent by, *inter alia*, promotion, sales, and/or importation of the infringing iTero Element Scanners to Defendant's customers including, but not limited to, resellers and end users for their use of the system claimed in the '551 patent. Those customers directly infringe the '551 patent by making, using, selling, offering for sale, and/or importing the iTero Element Scanners. For example, Defendant is liable for contributory infringement by having knowledge of the '551 patent and knowingly causing or intending to cause, and continuing to knowingly cause or intend to cause, end users of Defendant's iTero Element Scanners including, but not limited to, dentists and technicians, to directly infringe the '551 patent by using Defendant's iTero Element Scanners in the United States.

80. Defendant's past and ongoing infringement of the '551 patent has and will continue to irreparably harm Plaintiff.

81. Defendant's past and ongoing infringement of the '551 patent has and will continue to cause Plaintiff damages.

82. Defendant's past and ongoing infringement of the '551 patent, upon information and belief, has been knowing and willful.

COUNT 4: DIRECT INFRINGEMENT OF THE '042 PATENT

83. Plaintiff incorporates by reference the preceding paragraphs as if set forth fully herein.

84. This cause of action arises under the patent laws of the United States, and in particular, 35 U.S.C. §§ 271, *et seq.*

85. The '042 patent was duly and lawfully issued by the United States Patent and Trademark Office ("USPTO") on July 9, 2019, to listed inventors Rune Fisker, Henrik Öjelund, Rasmus Kjaer, Mike van der Poel, Arish A. Qazi and Karl-Josef Hollenbeck.

86. Plaintiff is the owner by assignment of all right, title and interest in and to the '042 patent. Evidence of the assignment of the '042 patent to Plaintiff is recorded with the USPTO at Reel/Frame 048470/0993. Plaintiff is listed on the face of the '042 patent as assignee.

87. The '042 patent is entitled, "Focus Scanning Apparatus."

88. The '042 patent is directed to intraoral scanners for providing data for 3D geometry of at least a part of the surface of an object in an oral cavity, and methods of providing data for 3D geometry of at least a part of the surface of an object in an oral cavity using an intraoral scanner.

89. Defendant makes, uses, offers to sell, sells, imports, promotes and/or demonstrates versions of its iTero Element Scanners, including the wand, cart, and/or related software, and other related products ("Accused Products") in the United States.

90. Defendant possesses knowledge of, and is aware of, the '042 patent.

91. Defendant has been and is now directly infringing, literally and/or under the doctrine of equivalents at least claims 1, 17, 19, and 21 of the '042 patent.

92. Each of Defendant's Accused Products includes an intraoral scanner for providing data for 3D geometry of at least a part of the surface of an object in an oral cavity, and a method of providing data for 3D geometry of at least a part of the surface of an object in an oral cavity using an intraoral scanner.

93. Upon information and belief, each of Defendant's iTero Element Scanners comprises a color image sensor comprising an array of sensor elements.

94. Upon information and belief, each of Defendant's iTero Element Scanners comprises lighting equipment configured to generate a probe light.

95. Upon information and belief, each of Defendant's iTero Element Scanners comprises an optical system comprising a beam splitter, at least one lens, and a tip configured to be inserted into the oral cavity.

96. Upon information and belief, in each of Defendant's iTero Element Scanners, the intraoral scanner is configured to operate by translating a focus plane along an optical axis of the optical system to capture one or more 2D images.

97. Upon information and belief, in each of Defendant's iTero Element Scanners, the lens is configured such that the intraoral scanner transmits a part of the probe light from the lighting equipment through the optical system and towards the object such that the part of the probe light is focused onto at least two different parts of the object, wherein the part of the probe light as focused on a first part of the object is defined by a first divergence angle in relation to a first propagation axis, wherein the part of the probe light as focused on a

second part of the object is defined by a second divergence angle in relation to a second propagation axis, and the first propagation axis and the second propagation axis are non-parallel.

98. Upon information and belief, in each of Defendant's iTero Element Scanners, reflected light results from the part of the probe light being reflected from the part of the surface of the object.

99. Upon information and belief, in each of Defendant's iTero Element Scanners, the intraoral scanner is further configured to transmit the reflected light from the part of the surface of the object back through the optical system such that the reflected light is focused on the color image sensor, the color image sensor being configured to produce the data for the 3D geometry from a series of 2D images captured by the intraoral scanner translating the focus plane along the optical axis of the optical system, at least one of the series of 2D images being generated using the reflected light focused on the color image sensor.

100. These features of each of the iTero Element Scanners in paragraphs 93 to 99 above correspond to those recited and claimed in at least claim 1 of the '042 patent.

101. Upon information and belief, in each of Defendant's iTero Element Scanners, the lens is configured such that the intraoral scanner transmits at least a part of the probe light from the lighting equipment through the optical system and towards the object such that the part of the probe light is non-telecentrically focused on a part of the surface of the object.

102. These features of each of the iTero Element Scanners in paragraph 101 above correspond to those recited and claimed in at least claim 17 of the '042 patent.

103. Upon information and belief, in each of Defendant's iTero Element Scanners, the

lens is configured such that the intraoral scanner transmits at least a part of the probe light from the lighting equipment through the optical system and towards the object such that the part of the probe light is focused onto at least two different parts of the object, wherein the part of the probe light as focused on a first part of the object is defined by a first divergence angle in relation to a first propagation axis, wherein the part of the probe light as focused on a second part of the object is defined by a second divergence angle in relation to a second propagation axis, and the first propagation axis diverges from the second propagation axis.

104. These features of each of the iTero Element Scanners in paragraph 103 above correspond to those recited and claimed in at least claim 21 of the '042 patent.

105. Upon information and belief, operation of each of Defendant's iTero Element Scanners comprises inserting the tip into the oral cavity.

106. Upon information and belief, operation of each of Defendant's iTero Element Scanners comprises generating a probe light using the lighting equipment.

107. Upon information and belief, operation of each of Defendant's iTero Element Scanners comprises transmitting at least a part of the probe light from the lighting equipment through the optical system and towards the object such that the part of the probe light is non-telecentrically focused on at least a part of the surface of the object.

108. Upon information and belief, operation of each of Defendant's iTero Element Scanners comprises reflecting the part of the probe light from the part of the surface of the object to produce reflected light.

109. Upon information and belief, operation of each of Defendant's iTero Element Scanners comprises transmitting the reflected light from the part of the surface of the object

back through the optical system such that the reflected light is focused on the color image sensor, the color image sensor producing the data for the 3D geometry from a series of 2D images captured by the intraoral scanner translating a focus plane along an optical axis of the optical system, at least one of the series of 2D images being generated using the reflected light focused on the color image sensor.

110. These features of each of the iTero Element Scanners in paragraphs 105-109 above correspond to those recited and claimed in at least claim 19 of the '042 patent.

111. For example, upon information and belief, Defendant describes its iTero Element Scanner on an online webpage entitled "Products | iTero Intraoral Scanner," a copy of which is attached hereto as Exhibit G. The webpage contains text and an image describing and showing the iTero Element Scanner, and that it embodies the focus scanner recited in at least claims 1, 17, 19 and 21 of the '042 patent. *See* Products | iTero Intraoral Scanner (2016), http://www.itero.com/en-us/products/itero_element (last visited June 20, 2019) (the "Products | iTero Intraoral Scanner" webpage). The "Products | iTero Intraoral Scanner" webpage illustrates that a focus scanner comprises a color image sensor comprising an array of sensor elements, as recited in claims 1, 17, 19 and 21 of the '042 patent. *See* the "Products | iTero Intraoral Scanner" webpage ("Color scanning gives you a significant leap forward in visualization. The color sensor is integrated in the iTero Element scanner, and the patented dual-aperture lens system is designed to simultaneously capture 2D images in color with highly accurate 3D laser scanning.").

112. In addition, upon information and belief, Defendant illustrated the "Products | iTero Intraoral Scanner" webpage with the following image:



113. The image shows that the iTero Element Scanner comprises a tip configured to be inserted into the oral cavity, and reflecting light off of an object in the oral cavity

114. In addition, upon information and belief, Defendant describes its iTero Element Scanner on an online webpage entitled “iTero intraoral scanners,” a copy of which is attached hereto as Exhibit H. The webpage contains text and images describing and showing the iTero Element Scanner and that it embodies the focus scanner recited in at least claims 1, 17, 19 and 21 of the ’042 patent. *See* Align Technology (2019), http://www.aligntech.com/solutions/itero_scanner (last visited June 20, 2019) (the “iTero intraoral scanners” webpage). The “iTero intraoral scanners” webpage illustrates that a focus scanner comprises lighting equipment configured to generate a probe light, wherein the intraoral scanner is configured to operate by translating a focus plane along an optical axis of the optical system to capture one or more 2D images, and wherein the intraoral scanner is further configured to transmit the reflected light from the part of the surface of the object back through the optical system such that the reflected light is focused on the color image sensor, the color image sensor being configured to produce the data for the 3D geometry from a series of 2D images captured by the intraoral scanner translating the focus plane along the optical axis of the optical system, at least one of the series of 2D images being generated using reflected light focused on the color

image sensor, as recited in at least claims 1, 17 and 21 of the '042 patent. *See* the “iTero intraoral scanners” webpage (“The iTero Element intraoral scanner . . . [i]ts parallel confocal imaging technology uses optical and laser scanning to achieve accurate scans in color.”).

115. Upon information and belief, each of Defendant’s iTero Element Scanners is configured such that the part of the probe light is focused onto at least two different parts of the object, wherein the part of the probe light as focused on a first part of the object is defined by a first divergence angle in relation to a first propagation axis, wherein the part of the probe light as focused on a second part of the object is defined by a second divergence angle in relation to a second propagation axis, and the first propagation axis and the second propagation axis are non-parallel (as recited in at least claim 1 of the '042 patent), such that at least a part of the probe light is non-telecentrically focused on at least a part of the surface of the object (as recited in at least claims 17 and 19 of the '042 patent), and such that the part of the probe light is focused onto at least two different parts of the object, wherein the part of the probe light as focused on a first part of the object is defined by a first divergence angle in relation to a first propagation axis, wherein the part of the probe light as focused on a second part of the object is defined by a second divergence angle in relation to a second propagation axis, and the first propagation axis diverges from the second propagation axis (as recited in at least claim 21 of the '042 patent).

116. Defendant has sold and/or offered for sale its iTero Element Scanners in the United States at trade shows in Chicago, IL, New York, NY and Detroit, MI. The “Align Technology Announces Next Generation iTero(R) Element(TM) Intraoral Scanner” webpage (last visited May 4, 2018), attached hereto as Exhibit E, is further evidence of Defendant’s sale

and/or offer for sale of the iTero Element Scanner product in the United States.

117. Defendant thus directly infringes, literally and/or under the doctrine of equivalents, and/or indirectly infringes, at least claims 1, 17, 19 and 21 of the '042 patent.

118. On information and belief, Defendant intends to, and continues to intend to, directly infringe the '042 patent through the sale of the Accused Products.

119. Defendant knew or should have known of the '042 patent and its infringement of the '042 patent, and has acted and continues to act, in an egregious and wanton manner by infringing the '042 patent.

120. Despite knowing that its actions constituted infringement of the '042 patent and/or despite knowing that there was a high likelihood that its actions constituted infringement of the patent, Defendant nevertheless continued its infringing actions, and continues to make, use, and sell, the Accused Products.

121. Defendant's acts of infringement have injured and damaged Plaintiff and will continue to injure and damage Plaintiff.

122. Defendant's actions have caused Plaintiff to suffer irreparable harm resulting from the loss of its lawful patent rights and the loss of its ability to exclude others from the market.

123. Upon information and belief, Defendant will continue these infringing acts unless enjoined by this court.

COUNT 5: INDIRECT INFRINGEMENT OF THE '042 PATENT BY INDUCEMENT

124. Plaintiff repeats and realleges the allegations set forth in paragraphs 1 to 123 above as if fully set forth herein.

125. Defendant is liable for inducing infringement of the '042 patent under 35 U.S.C. §271(b) by having knowledge of the '042 patent and knowingly causing or intending to cause, and continuing to knowingly cause or intend to cause, direct infringement of the '042 patent, with specific intent, by its customers.

126. Specifically, Defendant actively induces infringement of the '042 patent by, *inter alia*, training its customers on the use of the Accused Products and/or promotion, sales, and/or importation of the Accused Products including the infringing iTero Element Scanners to Defendant's customers including, but not limited to, resellers and end users for their use of the system claimed in the '042 patent.

127. Defendant's customers for the Accused Products directly infringe the '042 patent by making, using, selling, offering for sale, and/or importing the iTero Element Scanners.

128. For example, Defendant actively induces infringement of the '042 patent, because Defendant has knowledge that end users of Defendant's iTero Element Scanners including, but not limited to, dentists and technicians, use Defendant's infringing iTero Element Scanners product in the United States, and because Defendant encourages such acts resulting in direct patent infringement, by, *inter alia*, training, promotion, sales, and/or importation of the infringing iTero Element Scanners to Defendant's customers including, but not limited to, resellers and end users for their use of the system claimed in the '042 patent.

129. On information and belief, Defendant intends to, and continues to intend to, indirectly infringe the '042 patent through inducement of the sale and use of the Accused Products.

130. Defendant knew or should have known of the '042 patent and has acted, and

continues to act, in an egregious and wanton manner by infringing the '042 patent.

131. Despite knowing that its actions constituted inducement infringement of the '042 patent and/or despite knowing that there was a high likelihood that its actions constituted inducement infringement of the patent, Defendant nevertheless continued its infringing actions, and continues to make, use, and sell, the Accused Products.

132. Defendant's acts of infringement have injured and damaged Plaintiff and will continue to injure and damage Plaintiff.

133. Defendant's actions have caused Plaintiff to suffer irreparable harm resulting from the loss of its lawful patent rights and the loss of its ability to exclude others from the market. Upon information and belief, Defendant will continue these infringing acts unless enjoined by this court.

**COUNT 6: INDIRECT INFRINGEMENT OF THE '042 PATENT BY
CONTRIBUTORY INFRINGEMENT**

134. Plaintiff repeats and realleges paragraphs 1 to 133 as if fully set forth herein.

135. Defendant is liable for contributory infringement of the '042 patent under 35 U.S.C §271(c) by having sold or offered to sell, and continuing to sell or offer for sale the iTero Element Scanners within the United States and/or by importing the iTero Element Scanners into the United States because the iTero Element Scanners constitute a material part of the invention embodied in the '042 patent, which Defendant knows to be especially made and/or especially adapted for use in infringement of the '042 patent, and which is not a staple article or commodity of commerce suitable for substantial non-infringing use.

136. Defendant is liable for contributory infringement by having knowledge of the

'042 patent and knowingly causing or intending to cause, and continuing to knowingly cause or intend to cause, direct infringement of the '042 patent by its customers including, but not limited to, resellers and end users of the iTero Element Scanners.

137. Specifically, Defendant contributes to infringement of the '042 patent by, *inter alia*, promotion, sales, and/or importation of the infringing iTero Element Scanners to Defendant's customers including, but not limited to, resellers and end users for their use of the system claimed in the '042 patent. Those customers directly infringe the '042 patent by making, using, selling, offering for sale, and/or importing the iTero Element Scanners. For example, Defendant is liable for contributory infringement by having knowledge of the '042 patent and knowingly causing or intending to cause, and continuing to knowingly cause or intend to cause, end users of Defendant's iTero Element Scanners including, but not limited to, dentists and technicians, to directly infringe the '042 patent by using Defendant's iTero Element Scanners in the United States.

138. Defendant's past and ongoing infringement of the '042 patent has and will continue to irreparably harm Plaintiff.

139. Defendant's past and ongoing infringement of the '042 patent has and will continue to cause Plaintiff damages.

140. Defendant's past and ongoing infringement of the '042 patent, upon information and belief, has been knowing and willful.

DEMAND FOR JURY TRIAL

Plaintiff demands a trial by jury for all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that this Court enter:

A. A judgment in favor of Plaintiff that Defendant has infringed the '551 patent and the '042 patent, directly, jointly, and/or indirectly by way of inducing and/or contributing to the infringement of the '551 patent and the '042 patent;

B. An order of this Court permanently enjoining Defendant and its officers, directors, agents, affiliates, employees, divisions, branches, subsidiaries, parents, and all others in active concert therewith from infringing, including inducing the infringement of, or contributing to the infringement of, the '551 patent and the '042 patent;

C. A judgment and order requiring Defendant to pay Plaintiff its damages, costs, expenses, and pre-judgment and post-judgment interest for Defendant's infringement of the '551 patent and the '042 patent, as provided under 35 U.S.C. § 284;

D. A judgment and order requiring Defendant to pay treble damages as provided under 35 U.S.C. § 284;

E. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285, and awarding to Plaintiff its reasonable attorneys' fees; and

F. Any and all other relief to which Plaintiff may show itself to be entitled and/or as the Court may deem just and proper.

Dated: August 30, 2019

/s/ Geoffrey Grivner

Geoffrey Grivner (DE Bar No. 4711)
BUCHANAN INGERSOLL
& ROONEY PC
919 North Market Street, Suite 1500
Wilmington, DE 19801
Tel: (302) 552-4207
Fax: (302) 552-4200
geoffrey.grivner@bipc.com

S. Lloyd Smith (*pro hac pending*)
BUCHANAN INGERSOLL
& ROONEY PC
1737 King Street, Suite 500
Alexandria, VA 22314-2727
Tel: (703) 838-6514
Fax: (703) 836-2021
lloyd.smith@bipc.com

Attorneys for Plaintiff
3Shape A/S